

EPIDEMIOLOGIC PROFILE OF HIV, STDS, TB AND VIRAL HEPATITIS IN NORTH DAKOTA



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INTRODUCTION

The Epidemiologic Profile of HIV, STDs, TB and Viral Hepatitis describes the epidemiology of HIV/AIDS; sexually transmitted diseases (chlamydia, gonorrhea and syphilis); tuberculosis (latent and active); hepatitis B (HBV); and hepatitis C (HCV) in North Dakota during 2016. This profile covers the general epidemiology of diseases in terms of gender, age, race, geography and associated casual factors. This profile was created to assist in developing a Comprehensive Jurisdictional Prevention and Care Plan. Information in this report is used to characterize and predict the changing epidemic at the local level. North Dakota data are summarized annually to help North Dakota's Department of Health (NDDoH) answer questions about how to prevent these diseases in the population. This profile is focused around answering these key questions:

- What are the socio-demographic characteristics of North Dakota's population?
- What is the epidemiology, including the geographical distribution, of HIV/AIDS, sexually transmitted disease, tuberculosis and viral hepatitis in North Dakota?
- What are the patterns of utilization of services throughout the state?

Table 1. Common abbreviations/acronyms used throughout this profile

ABBREVIATION	FULL DESCRIPTION
ADAP	AIDS Drug Assistance Program
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
CPG	Community Planning Group
CTR	Counseling, Testing and Referral
EHARS	Electronic HIV/AIDS Reporting System
EPT	Expedited Partner Therapy
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IDU	Injection Drug User
HRSA	Human Resources and Services Administration
MSM	Men Who Have Sex with Men
NDDOH	North Dakota Department of Health
PLWH	Persons Living With HIV/AIDS
PWID	Persons Who Inject Drugs
RW	Ryan White
STD	Sexually Transmitted Disease
ТВ	Tuberculosis

DATA SOURCES

Data were compiled from a number of sources to present the most complete picture of the epidemiology of diseases as possible. However, because few behavioral or supplemental surveillance projects are available in North Dakota, core surveillance data is utilized extensively. Each data source has strengths and limitations. A brief description of each source follows.

HIV/AIDS DATA SOURCES

HIV/AIDS CASE SURVEILLANCE

A diagnosis of HIV/AIDS is mandatory reportable to the NDDoH according to North Dakota Century Code Chapter 23-07-01 and North Dakota Administrative Code Chapter 33-06-01. Reports of HIV/AIDS cases can be provided by physicians, hospitals, laboratories and other institutions. These data are stored in electronic HIV/AIDS Reporting System (eHARS) and MAVEN databases. Statistics and trends presented in this report were derived from HIV/AIDS case data reported to the NDDoH cumulatively starting in 1984 through December 31, 2016.

HIV COUNSELING AND TESTING DATA

COUNSELING, TESTING AND REFERRAL (CTR) SYSTEM

The NDDoH funds 21 free, confidential HIV testing and counseling sites in North Dakota, and holds contracts with all sites to provide rapid testing. Participants complete risk assessments as part of a testing visit or during outreach. Risk factors of the patients who receive tests through this program are reported to NDDoH.

HIV CARE DATA

RYAN WHITE PART B PROGRAM

The North Dakota Ryan White Part B Program (formerly known as North Dakota CARES) assists low-income North Dakota residents living with HIV or AIDS to access confidential health and supportive services. The program was implemented in 1991. In order to participate in the North Dakota Ryan White Part B Program, one must be a resident of North Dakota, have a gross income of less than 400 percent of the current Federal Poverty Level and have proof of HIV infection.

Part B services include core and supportive medical services. Core services include outpatient/ambulatory medical services, AIDS Drug Assistance Program (ADAP), oral health care, health insurance premium assistance, mental health services and medical case management. Supportive services include non-medical case management, housing services, medical transportation services and emergency financial assistance.

The Ryan White Part B Program implemented the surveillance system MAVEN for client data management in 2012. MAVEN hosts HIV prevention, surveillance and Ryan White data, and it has created a seamless integration and sharing of information between these programs. MAVEN also hosts data from all Part B providers, including the ADAP. Utilization of the current version of MAVEN will ensure that all required client-level data elements will be collected by providers and reported to HRSA. The "real time" nature of the networked system allows the Ryan White Part B Program to monitor specific indicators more closely

(e.g., number of clients without medical insurance), and it gives case managers access to view lab work and medication so that clients can be served more effectively.

MAVEN allows agencies to share information, thereby improving timeliness, access to care and medication, and tracking of quality indicators. Information collected from the service providers includes basic demographic and risk information, eligibility verification data (e.g., current address, income, insurance information and policy numbers), the type of services received, the date and quantity of services received, the cost of these services, the name of agency and case manager that provided these services, and other pertinent information (e.g., history of substance abuse or mental health treatment, veteran status). Each client is assigned to his or her case manager in MAVEN. The surveillance program collects additional information (e.g., pregnancy status, HIV diagnosis date, lab work), and the prevention program collects partner information. The data indicate which Ryan White resources are being used, how often and by whom. However, these data only reflect persons who (1) know their HIV sero-status, (2) are currently seeking care and treatment services from Ryan White Part B-funded providers, and (3) are financially eligible to receive services.

STD DATA SOURCES

STD SURVEILLANCE CASE REPORTING

The NDDoH STD Prevention Program conducts statewide surveillance to determine the number of reported cases of STDs. These data are used to monitor trends and to offer voluntary partner counseling and partner notification services. Chlamydia, gonorrhea and syphilis cases are mandatory reportable conditions in North Dakota. STD surveillance data can serve as surrogate markers for unsafe sexual practices and may demonstrate changes in behavior among specific populations that increase their risks for HIV infection. Because of a shorter time from infection to symptomatic disease, STD diagnoses may better indicate recent unsafe behavior and/or changes in community norms. In addition, certain STDs can facilitate the transmission of HIV infection.

TUBERCULOSIS SURVEILLANCE DATA

Tuberculosis (*Mycobacteria tuberculosis* and *Mycobacteria bovis*) is a mandatory reportable disease and must be reported to the NDDoH according to North Dakota Administrative Code Chapter 33-06. Reports of active and latent TB cases are provided by physicians, laboratories and local public health units. These data are stored in MAVEN, creating an integrated electronic disease surveillance system.

VIRAL HEPATITIS SURVEILLANCE DATA

The Hepatitis Program receives reports of HBV and HCV acute and chronic infections from various reporting sources. HBV infections are investigated to determine if post-exposure immune-prophylaxis procedures for contacts were followed. Follow-up is conducted of females of child-bearing age (14 to 44 years) who are HBV positive to determine if they are pregnant. Pregnant females who are HBV positive are then followed by the perinatal HBV prevention coordinator in the immunization program. The coordinator ensures the hospital has HBV immune globulin (HBIG) for administration to the baby at time of delivery. The coordinator also confirms the baby is given the HBV vaccine series and ensures serology testing is done at completion of the vaccine series to ensure the child is not infected and is immune to the HBV virus.

Cases of HCV that are reported as acute are followed by a case investigation. Cases of HCV that were contracted in the past are reported as chronic HCV. For chronic cases, interviews and partner notification are not conducted by the NDDoH, and only demographic information is collected. Under-reporting of both acute and chronic HCV infections in North Dakota is likely. Data reported here do not distinguish between resolved and active infections.

VITAL STATISTICS DATA

BIRTH AND DEATH DATA

The NDDoH Division of Vital Statistics collects information on all births and deaths in North Dakota. The birth certificate form includes demographic information on the newborn infant and the parents, prenatal care, maternal medical history, mode of delivery, events of labor and abnormal conditions of the infant. Death certificates include demographics, underlying cause of death and factors contributing to the death. The surveillance program reviews death certificates on a weekly basis to ascertain deaths of HIV-positive persons. The surveillance program also electronically matches data with death and birth databases annually to ascertain deaths of persons with HIV/AIDS and births to HIV-infected females.

DEMOGRAPHIC DATA

U.S. CENSUS BUREAU

The Census Bureau collects and provides timely information about the people and economy of the United States. The Census Bureau website (http://www.census.gov) includes data on demographic characteristics (e.g., age, race, ethnicity and sex) of the population, family structure, educational and income level, housing status and the proportion of persons who live at or below the poverty line. Summaries of the most requested information for states and counties are provided, as well as analytical reports on population changes, age, race, family structure and apportionment. State- and county-specific data are easily accessible, and links to other web sites with census information are included.

GUIDELINES TO INTERPRETATION OF THE DATA

Decisions about how to allocate limited resources for prevention and care services depend, in part, on appropriate interpretation of epidemiological data. The following guidelines are intended to facilitate proper interpretation of the tables and figures presented in this profile.

These data have certain limitations. This report will not specifically differentiate, unless indicated, whether or not an individual is or is not at the stage of AIDS for HIV infections. The first AIDS case reported in North Dakota was diagnosed in 1984. Reporting of HIV-infected persons in North Dakota began in 1984. HIV surveillance reports may not be representative of all infected persons because not all infected persons have been tested or reported. Data are collected for the entire state of North Dakota, which include data for patients who are diagnosed for the first time in North Dakota, as well as patients who move to North Dakota after they have been diagnosed. Data do not necessarily take into account emigration out of North Dakota, although efforts are made to account for this in HIV prevalence data. State and county of diagnosis do not change even if a person moves to a different county or out of state.

Results that contradict or do not agree with those from other sources should be examined carefully. All data sources are not equivalent in how they can be generalized to the population of North Dakota. In particular, scientific studies should be examined for their purposes and for the population studied. Where scientific studies are presented, their limitations will be included in the discussion.

Diagnosis rates have been calculated for 12-month periods per 100,000 persons. The denominator for calculating rates, unless otherwise noted, is based on 2016 population estimates from the U.S. Bureau of Census. One exception to this is the North Dakota population by race, which uses available 2015 data. The numerator is the number of cases reported during the 12-month period. This number is divided by the population estimate and multiplied by 100,000. For example, race-specific rates are the number of cases reported for a particular racial/ethnic group during the preceding 12-month period divided by the estimated population for that race/ethnicity and multiplied by 100,000.

NORTH DAKOTA DEMOGRAPHICS

North Dakota is a rural state that covers 70,704 square miles and in 2016 had a population of 756,927, according to the U.S. Census Bureau. North Dakota ranks 47th in the nation by population. It contains 53 incorporated counties; 13 cities have populations of more than 10,000; 33 cities have populations of more than 2,500. County populations in North Dakota range from 763 to 175,249 people. The six counties along the eastern border with Minnesota account for more than one-third of the state's population.

AGE AND GENDER DISTRIBUTION

At the time of the most current U.S. Census (2015), North Dakota's population was 51 percent male and 49 percent female, a distribution that has been consistent for at least six years. More than one quarter of North Dakota's population is over the age of 55. Of the remaining 75 percent, adults ages 20 to 24 are disproportionately represented. Within that group, there are 15 percent more males than females. The largest discrepancy between males and females is between the ages of 25 and 29, where there are 25 percent more males than females.

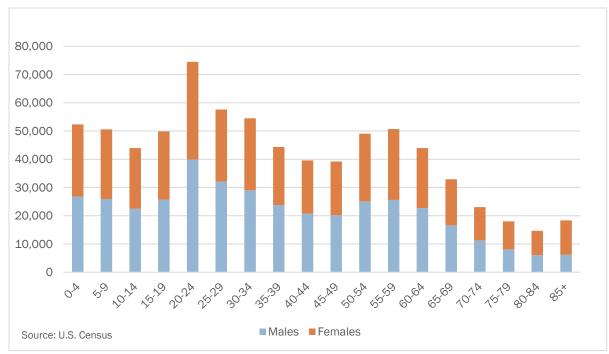


Figure 1. North Dakota population by age group and gender, 2015

RACE DISTRIBUTION

The majority of North Dakota's population (88.6 percent) reports white as their race. The largest minority group is American Indian and Alaskan Natives, accounting for 5.5 percent,

most of whom reside in Rolette and Sioux counties. The African American/Black population follows, accounting for an estimated 2.4 percent of the total population.

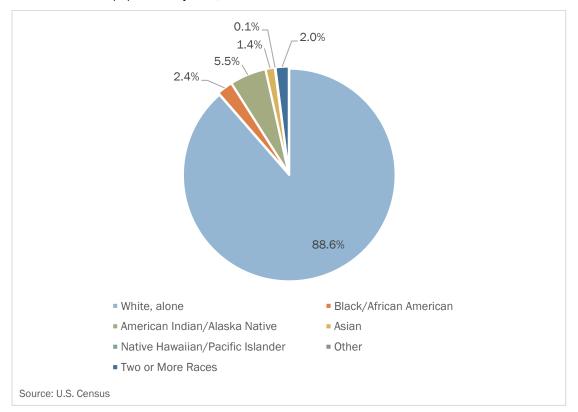


Figure 2. North Dakota population by race, 2016

SOCIAL CHARACTERISTICS

The social characteristics of North Dakota include education, place of birth and poverty level. The majority (91.7 percent) of the population age 25 and older have graduated from high school. The percentage of the population born in a country other than the United States is 3.2 percent. Approximately 11 percent of the North Dakota population live on wages below the federal poverty level. For a household of one, that equates to \$11,880 in 2016.

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

TOTAL REPORTED CASES OF HIV INFECTION

In 2016, there were 88 reported cases of HIV/AIDS. This number includes new diagnoses, as well as individuals previously diagnosed who have moved to the state for the first time.

Source: NDDoH Division of Disease Control

Figure 3. Number of HIV/AIDS cases reported by year, 2007-2016

HIV PREVALENCE

There were 390 people with HIV/AIDS known to be living in North Dakota as of December 31, 2016. Of those, 207 are at the stage of HIV infection, and 183 have progressed to an AIDS diagnosis. The group is made up of 262 males and 128 females.

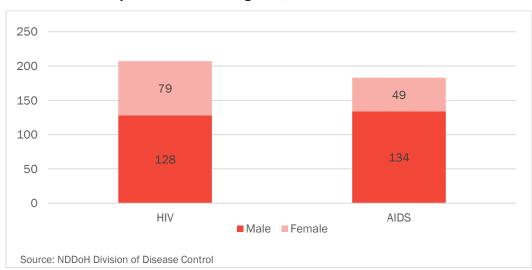


Figure 4. Number of cases by infection status and gender, 2016

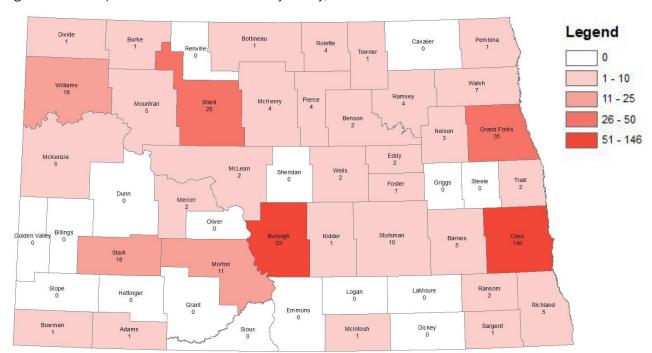


Figure 5. Total HIV/AIDS cases in North Dakota by county, 2016

2016 INCIDENCE OF HIV/AIDS

Incidence refers to cases newly diagnosed within the state during a given year. Persons who have been diagnosed in another state, then move to North Dakota, are not counted in an incidence report. However, persons that were diagnosed in a foreign country and then move directly to North Dakota are included in the incidence report. North Dakota reported 50 new cases of HIV/AIDS in 2016; 21 (42 percent) are foreign-born.

GENDER

Of the 50 incident cases, 32 (64 percent) are male and 18 are female.

■ Male ■ Female Source: NDDoH Divison of Disease Control

Figure 6. Gender of HIV/AIDS cases diagnosed in North Dakota, 2012-2016

AGE

In 2016, the age range of newly diagnosed HIV cases was 16 to 66 years old, with a mean age of 38.

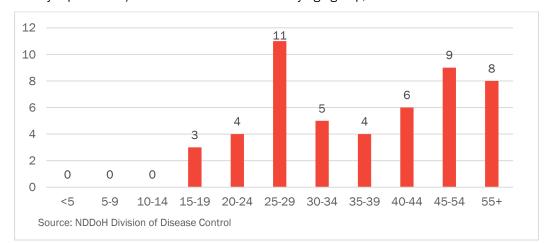
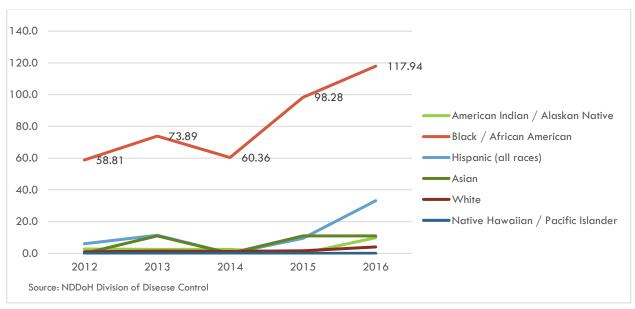


Figure 7. Newly reported HIV/AIDS cases in North Dakota by age group, 2016

RACE

In 2016, white was the most common race reported for incident HIV cases. Whites accounted for 27 (54 percent) of the cases. Black/African Americans had the second highest number of reported HIV cases, with a total of 18. Due to comprising less than 2 percent of the population in North Dakota, however, the Black/African American race has the highest rate of HIV with a rate of 118 cases per 100,000.





COUNTRY OF BIRTH

HIV incidence includes cases that are newly diagnosed in North Dakota. This can include persons that were diagnosed in a foreign country and then move directly to North Dakota. In 2016, 21 (42 percent) of the incident cases were born in a foreign country.

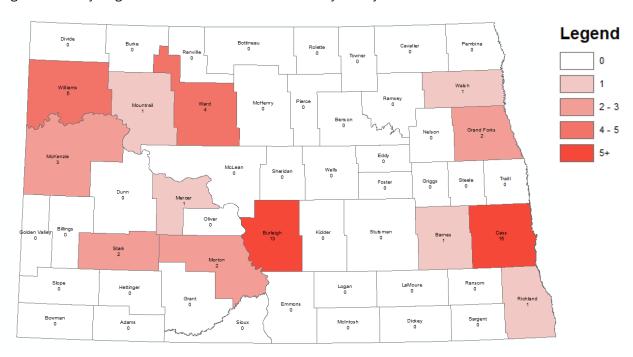


Figure 9. Newly reported HIV/AIDS cases in North Dakota by country of birth, 2012-2016

GEOGRAPHY

In 2016, 13 counties reported at least one new case of HIV. This is up from 2015 when nine counties reported. The maximum number of new cases in one county was 15.





RISK OF INFECTION

Nationally, HIV is most often reported among men who have sex with men (MSM). North Dakota risk data shows similar patterns between both prevalent cases and incident cases among males from 2012 to 2016. In female cases in North Dakota, heterosexual contact remains to be the primary risk factor. In 2016, there was report of injection drug use as a risk factor in males and females, which had not been seen in the previous five years.

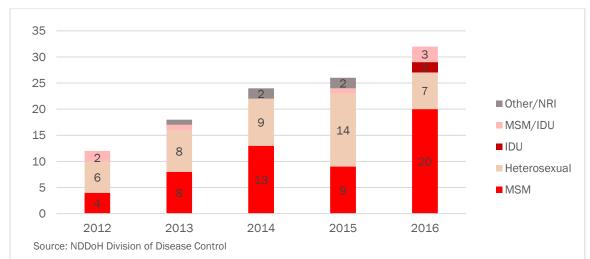
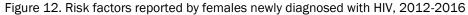
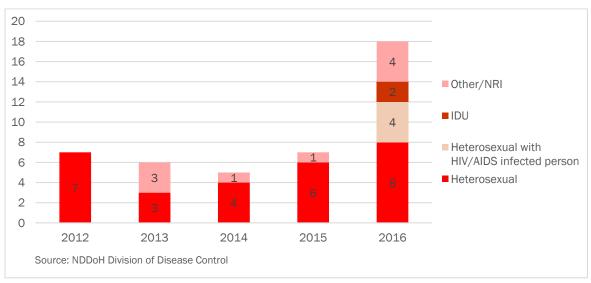


Figure 11. Risk factors reported by males newly diagnosed with HIV, 2012-2016





FACTORS AFFECTING THE NUMBER OF DIAGNOSES

Although HIV diagnoses are one indication of HIV infection rates, they do not present the complete picture. Many factors may affect when or if a person gets tested for and diagnosed with HIV infection. Many service providers note the following barriers to HIV testing:

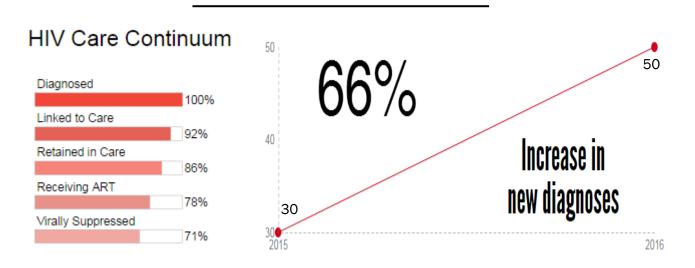
- A general lack of knowledge about how HIV is transmitted
- An individual's belief that he/she is not at risk for contracting HIV (perceived risk)
- Logistical barriers such as proximity to testing sites, transportation and limited hours of operation
- Language barriers
- Pervasive stigma associated with HIV

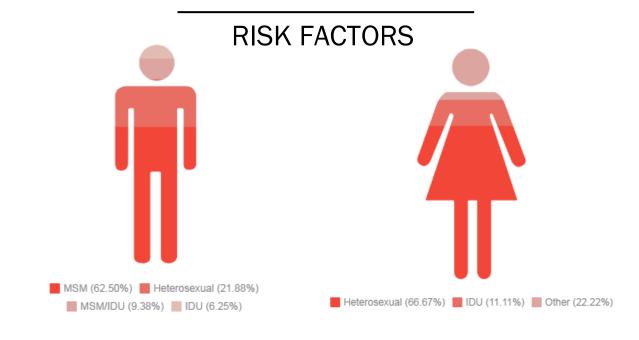
The impact of testing barriers on the state's capacity to identify cases of HIV may be significant. Individuals who are infected and do not know they are infected may not seek testing unless they have the means, the knowledge or a significant reason (e.g., symptoms) to do so. Considering these possible limitations, studying a broad sample of directed testing efforts is, to some degree, an examination of the potential prevalence of the disease. In 2016, the NDDOH funded 21 free, confidential HIV counseling, testing and referral (CTR) sites.

HIV SUMMARY - 2016



People with HIV/AIDS living in North Dakota.





SEXUALLY TRANSMITTED DISEASES (STDS)

CHLAMYDIA

Chlamydia is the most commonly reported condition in the United States. In 2016, 3,463 chlamydia cases were reported in North Dakota, a rate of 457.5 cases per 100,000 persons.

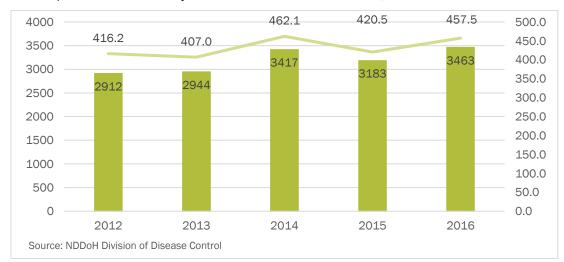


Figure 13. Reported cases of chlamydia and North Dakota incident rate, 2012-2016

GENDER

Of the cases reported, 2,191 (63 percent) were females. This is expected as females are more frequently screened for the disease through annual gynecological visits and prenatal care.

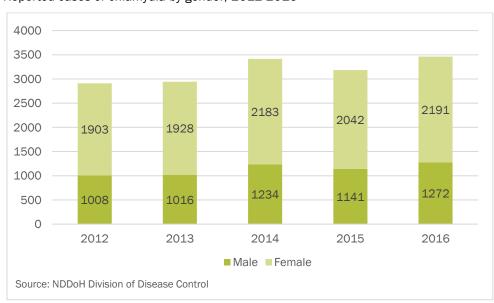
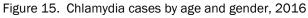


Figure 14. Reported cases of chlamydia by gender, 2012-2016

AGE

The majority of chlamydia cases since 2012 have been in adults between the ages of 20 and 24. The second highest age category are teenagers aged 15 to 19. However, the mean age of chlamydia cases has been steadily increasing since 2012. Male cases of chlamydia are on average older than female cases.



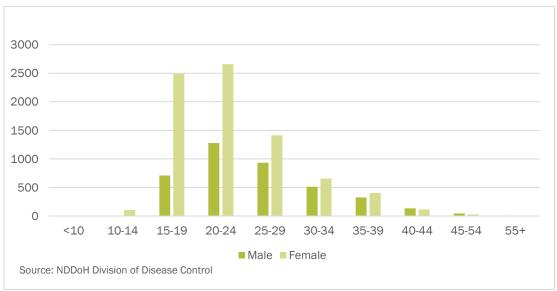
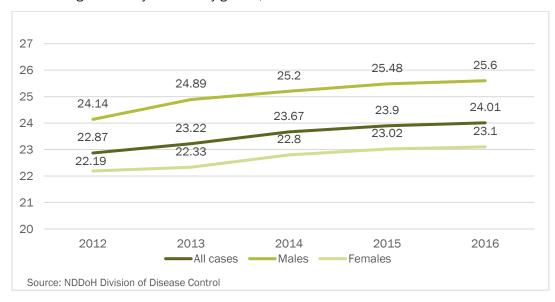


Figure 16. Mean age of chlamydia cases by gender, 2012-2016



RACE

Of cases with a known race, 1,908 cases were reported to be white, followed by American Indian/Alaskan Natives with 746 cases, Black/African Americans with 409 cases and Asians with 44 cases. Native Hawaiians or Pacific Islanders were not included in the graph due to a limited number of cases among a small resident population in North Dakota. Due to smaller population sizes, Black/African Americans had the highest rate of 2,680 cases per 100,000 persons.

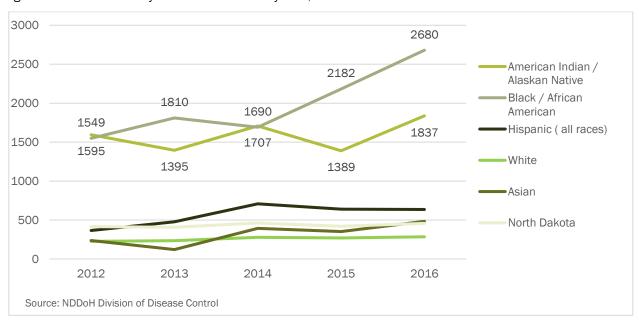


Figure 17. Rates of chlamydia in North Dakota by race, 2012-2016

GEOGRAPHY

In 2016, 50 of 53 counties reported at least one case of chlamydia. The map below lists the number of reported cases by county. The shading indicates the rate of chlamydia per 100,000 persons by county. Sioux, Benson and Rolette Counties reported the highest rates of chlamydia in 2016.

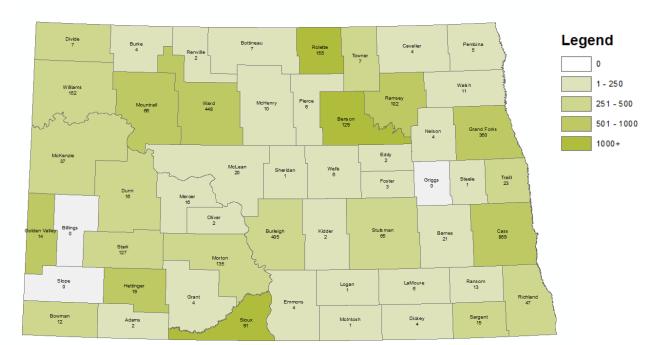


Figure 18. Chlamydia cases by county, 2016

FACTORS AFFECTING THE NUMBER OF DIAGNOSES

One important factor that could influence the overall greater number of reported chlamydia cases since 2012 is an increase in chlamydia testing across North Dakota. Although NDDoH has testing data for several facilities, the NDDoH does not have access to the number of tests performed for most private health facilities, as many do not utilize the NDDoH for STD testing. The laboratory data provided to NDDoH indicates that the number of private clinics utilizing the Division of Laboratory Services has decreased over the last five years.

In addition to increasing chlamydia among disproportionately affected populations, the level of partner services can also impact the incidence of chlamydia in the community. The percentage of female cases reported is much greater than that of males, but it is suspected that there are many infections undiagnosed among males. The inability for the NDDoH and healthcare providers to complete partner services for all chlamydia cases is one of the reasons for undiagnosed cases among males and other individuals at risk for chlamydia. Partner services for chlamydia are provided by the NDDoH only for those who are diagnosed with pelvic inflammatory disease, are under the age of 14 or are pregnant.

One method to improve partner services for chlamydia would be the utilization of? expedited partner therapy (EPT). A goal of the STD prevention program is to improve utilization and reporting by providing education to healthcare providers about EPT.

GONORRHEA

In 2014 and 2015, the gonorrhea rates remained steady after having increased an average of 40 percent each year prior. However, in 2016 there was again an increase in the number of gonorrhea cases. With a total of 1,005 cases, the number rose 46 percent from 2015. The rise in gonorrhea cases has been seen all across the United States with rates at unprecedented highs.

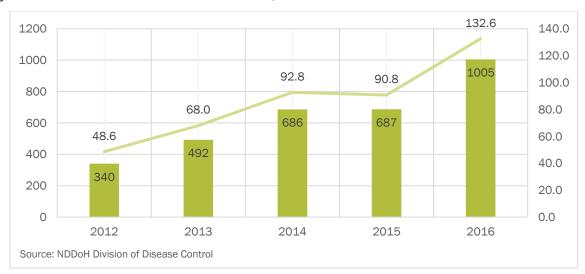


Figure 19. Gonorrhea cases and North Dakota rate, 2012-2016

GENDER

The gender distribution of gonorrhea is more evenly spread than chlamydia. Of the 1,005 cases, 517 (51 percent) were female and 488 were male.

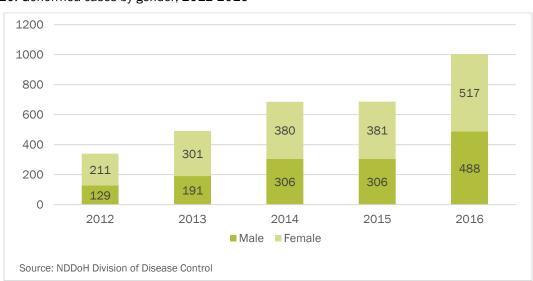


Figure 20. Gonorrhea cases by gender, 2012-2016

AGE

Teenagers and young adults continue to be disproportionally affected by gonorrhea with nearly half (46 percent) of cases being reported in persons under the age of 25. The average age of a gonorrhea case in 2016 was 26.7 years. Male cases are on average older than female cases.

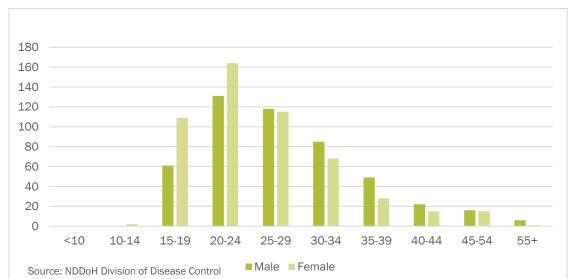
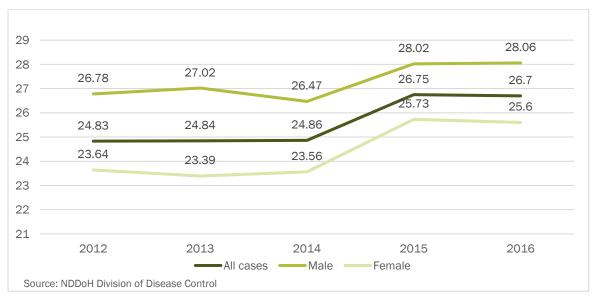


Figure 21. Gonorrhea cases by age and gender, 2016

Figure 22. Mean age of gonorrhea cases by gender, 2012-2016



RACE

All races saw an increase in gonorrhea rates in 2016. American Indians/Alaskan Natives accounted for the majority, with 440 cases and a rate of 1,034 cases per 100,000 persons. Black/African Americans had a total of 139 cases, with a rate of 911 cases per 100,000.

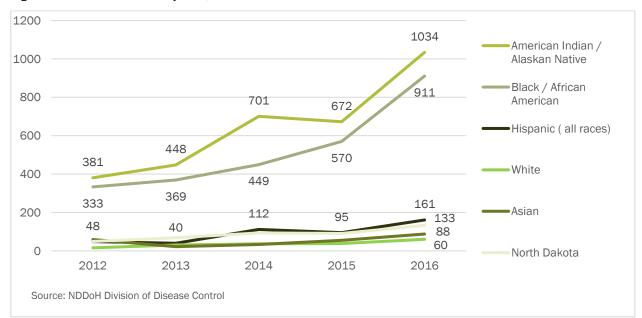
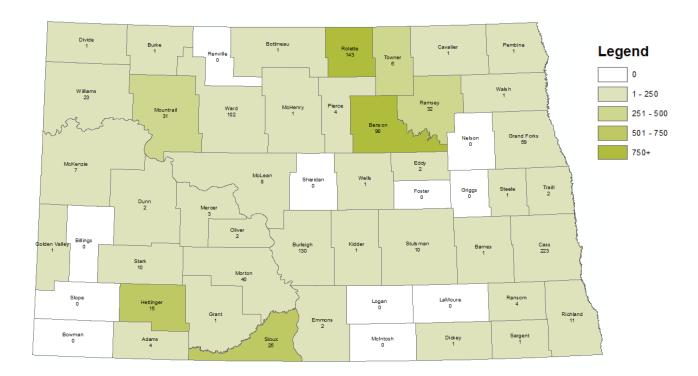


Figure 23. Gonorrhea rates by race, 2012-2016

GEOGRAPHY

In 2016, 42 counties reported at least one case of gonorrhea. The map below lists the number of reported cases by county. The shading indicates the rate of gonorrhea per 100,000 persons by county. Benson, Rolette and Sioux Counties reported the highest rates of gonorrhea in 2016.

Figure 24. Gonorrhea case counts and rate per 100,000 persons by county, 2016



FACTORS AFFECTING THE NUMBER OF DIAGNOSES

One important factor that could be affecting the rising number of gonorrhea cases since 2011 is the increase in gonorrhea testing across North Dakota. The NDDoH Division of Laboratory Services makes testing data available to the Division of Disease Control.

The available laboratory data does not provide a detailed picture of testing practices that occur throughout the state. The majority of gonorrhea diagnosed in North Dakota in 2016 occurred at private facilities. If increasing gonorrhea testing is also occurring at private clinics in North Dakota, this may explain why gonorrhea incidence is increasing.

In addition to the increasing gonorrhea among minority populations, the level of partner services provided can also impact the incidence of gonorrhea in the community. Partner services are provided for all individuals diagnosed with gonorrhea in North Dakota. The percentage of female cases reported is greater than that of males, but it is suspected that there are many infections that are undiagnosed among males.

SYPHILIS

In 2016, a total of 63 cases of syphilis were reported. This was a 42 percent increase from 2015. Of the cases reported, 45 were early stage (primary, secondary or early latent stages) of syphilis, which is infectious. Primary and secondary syphilis cases are diagnosed based on the presence of symptoms at the time of testing. Early latent is diagnosed based on the most likely exposure occurring within the last 12 months in the absence of symptoms.

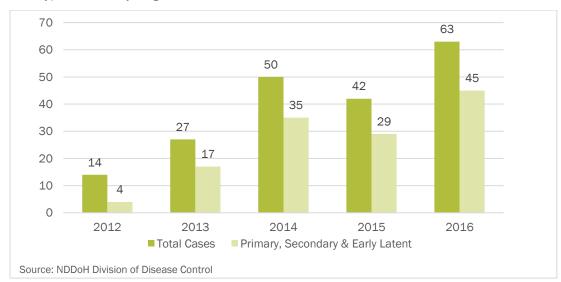


Figure 25. Syphilis cases by stage, 2012-2016

GENDER

Of the 63 syphilis cases in 2016, 51 (81 percent) cases were reported among males. Male cases increased 65 percent from 2015. Female cases decreased 17 percent. Because outward signs of infection in females are often not visible, it is difficult to diagnose the early infectious stage of syphilis in females.

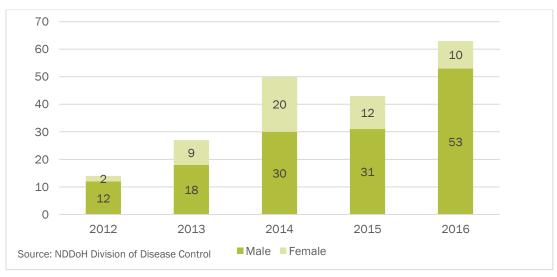


Figure 26. Number of syphilis cases by gender, 2012-2016

AGE

The mean age of syphilis cases is higher than for chlamydia and gonorrhea cases. In 2016, the average age of syphilis cases increased from 30.2 years to 33.4 years.

Figure 27. Syphilis cases by age and gender, 2016

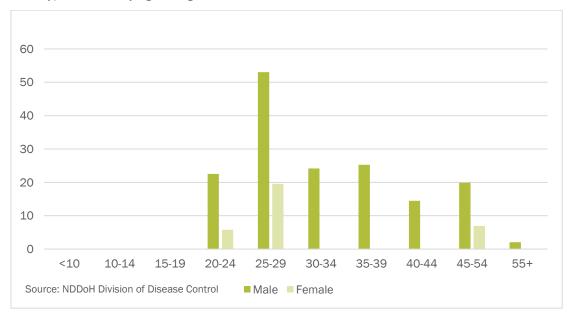
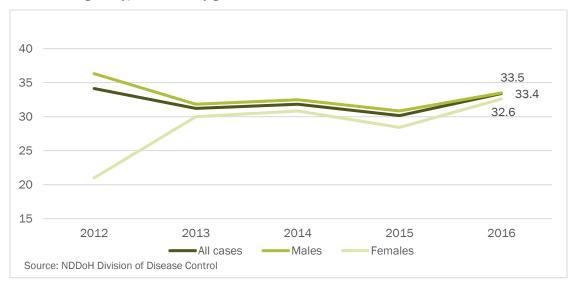


Figure 28. Mean age of syphilis cases by gender, 2012-2016



RACE

The majority of races saw an increase in syphilis rates in 2016. Black/African Americans experienced the highest rate of 59 cases per 100,000. American Indian/Alaskan Natives continued to see a decrease in the syphilis rate from 2014.

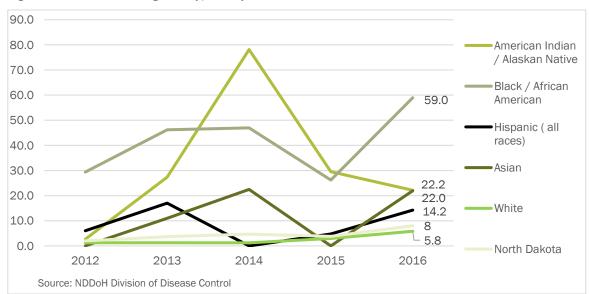


Figure 29. Rates of all stages of syphilis by race, 2012-2016

GEOGRAPHY

Syphilis cases were reported in 14 counties across the state. Counts by county ranged from one case to 26. The map below lists the number of reported cases by county. The shading indicates the syphilis rate per 100,000 persons by county.

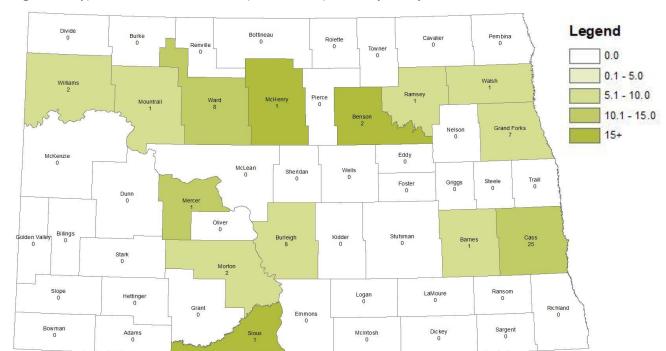
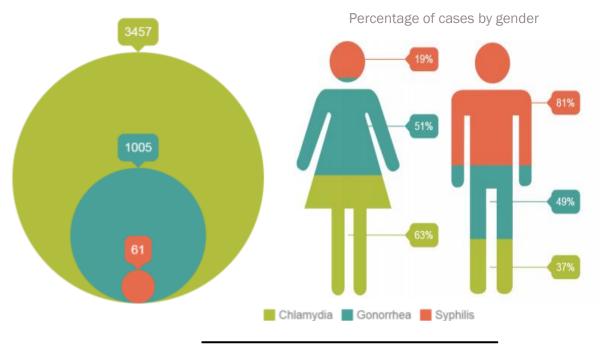


Figure 30. Syphilis case counts and rates per 100,000 persons by county

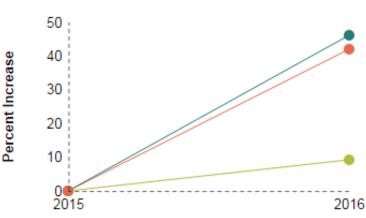
FACTORS AFFECTING THE NUMBER OF DIAGNOSES

Rates of syphilis have continued to increase across the country. From 2014 to 2016, there was an expected national increase of 33 percent. This correlates with North Dakota's 42 percent increase in syphilis cases.

SEXUALLY TRANSMITTED DISEASES SUMMARY - 2016



Chlamydia,
Gonorrhea and
Syphilis cases
increased in 2016.

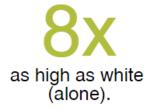


There is a large disparity among races for sexually transmitted infection rates.

Black/African Amercans have a case rate that is nearly

as high as white (alone).

American Indian/Alaskan Natives have a case rate that is



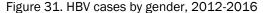
VIRAL HEPATITIS

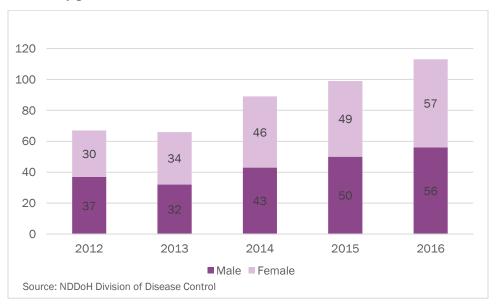
Hepatitis is the general term that means "inflammation of the liver." Many factors can cause hepatitis, including toxins, drugs, viruses, parasites and other factors. There are several types of viral hepatitis, but hepatitis A (HAV), hepatitis B (HBV) and hepatitis C (HCV) are the most common types of viral hepatitis in the U.S. and North Dakota. HAV is transmitted via fecal-oral route, primarily by a foodborne pathogen. HBV and HCV will be discussed in this document.

HEPATITIS B VIRUS (HBV)

In 2016, 113 cases of HBV were reported in North Dakota as meeting the CDC case definition. Reported numbers include both confirmed and probable cases.

GENDER

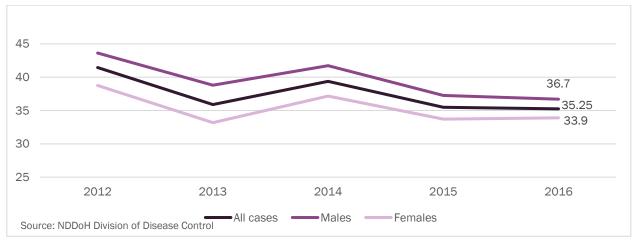




AGE

The average age of reported cases in 2016 was 35 years. The range between the youngest and oldest reported cases was 4 to 82. The average age of HBV cases has been decreasing since 2012. Male cases are on average older than female cases.

Figure 32. Mean age of HBV cases, 2012-2016 $\,$



RACE

The majority of HBV cases are Black/African Americans or Asian and occur in persons who are born in countries where HBV is endemic. Since vaccination programs were started in the United States, the number of HBV infections among American-born individuals has been drastically reduced.

Figure 33. HBV rates by race, 2012-2016

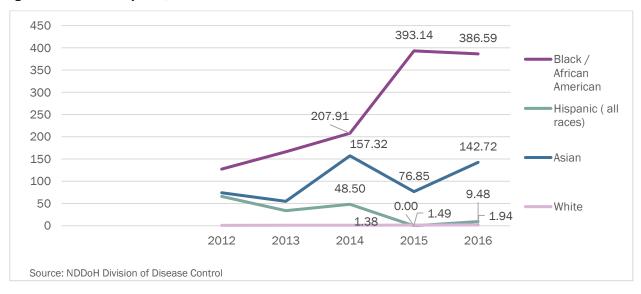
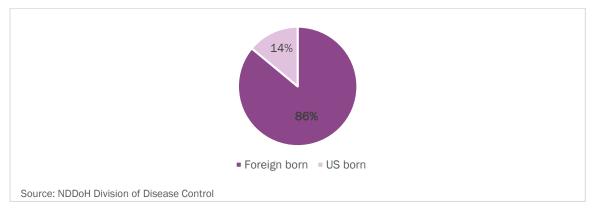


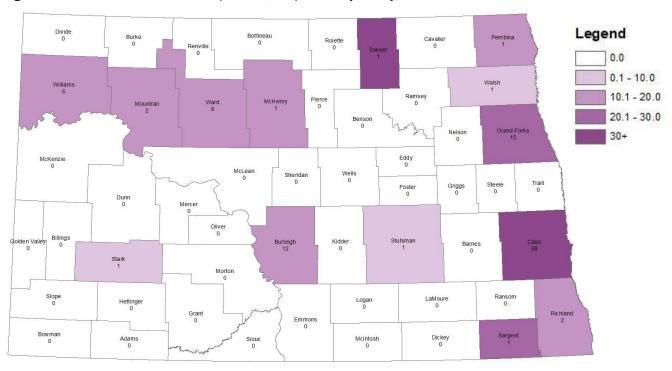
Figure 34. HBV cases by country of birth, 2016



GEOGRAPHY

In 2016, 14 counties reported at least one HBV case. The map below lists the number of cases reported by county. The shading indicates the rate of HBV per 100,000 persons by county.

Figure 35. HBV case counts and rates per 100,000 persons by county, 2016



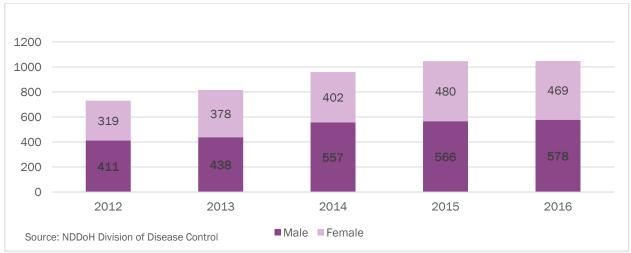
HEPATITIS C VIRUS (HCV)

In 2016, North Dakota received 1,047 reports of persons newly identified as having a positive laboratory result that indicates past or present HCV infection.

GENDER

Of the 1,047 HCV positive reports, 55 percent were male, although female cases have been steadily increasing.

Figure 36. HCV cases by gender, 2012-2016



AGE

HCV infections in North Dakota are predominantly an adult infection. The 25- to 34-age group has seen a 57 percent increase in the number of cases from 2012 to 2016. The 55+ population has seen a similar trend. The average age of HCV cases in 2016 was 40.6 years.

Figure 37. HCV cases by age, 2012-2016



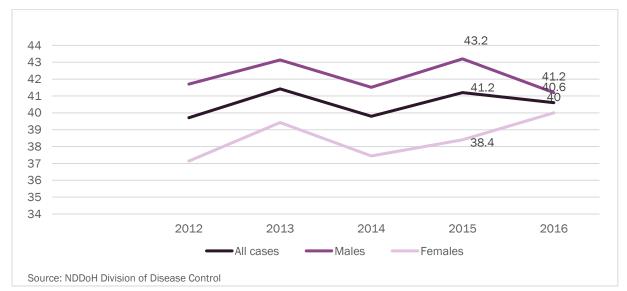


Figure 38. Average age of HCV cases by gender, 2012-2016

RACE

Of the 1,046 cases in 2016, 704 had a reported race. Among those, the majority were white (66 percent) followed by American Indians/Alaskan Natives that accounted for 27 percent. All races saw an increase in HCV rates in 2016.

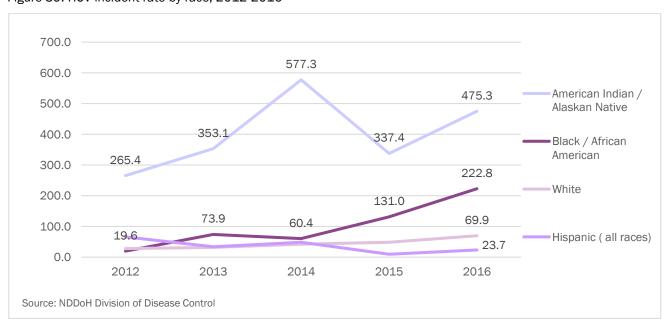


Figure 39. HCV incident rate by race, 2012-2016

GEOGRAPHY

In 2016, 48 counties reported at least one HCV case. The map below lists the number of reported cases by county. The shading indicates the rate of HCV per 100,000 persons by county.

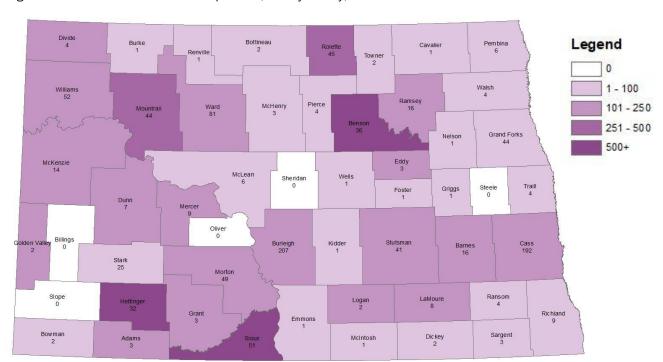


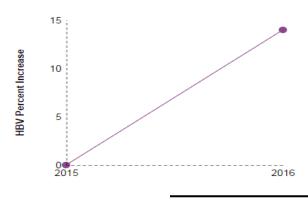
Figure 40. HCV case counts and rate per 100,000 by county, 2016

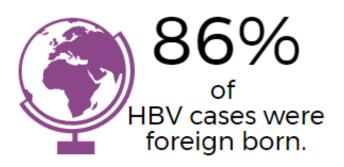
FACTORS AFFECTING THE NUMBER OF DIAGNOSES

There is no vaccine for HCV. HCV is spread primarily through large or repeated percutaneous (i.e., passage through the skin) exposures to infectious blood. Current and former injection drug users, including those who may have injected only once, are at risk for HCV infection. In 2012, the CDC increased recommendations for HCV screening among persons born from 1945 to 1965, a population with a disproportionately high prevalence of HCV.

VIRAL HEPATITIS SUMMARY - 2016

Hepatitis B





Hepatitis C

of HCV cases were Baby Boomers (born from 1945-1965).

However,
in the last 5 years
the largest increase
has been seen in
the
25-29
age group.

2017

SB 2320 authorizes syringe exchange in North Dakota.





The NDDoH increased active HCV surveillance.

TUBERCULOSIS (TB)

Twenty-two cases of active tuberculosis (TB) were reported to the NDDoH in 2016, an increase of 141 percent from 2015 (nine cases). A total of 9,287 cases of active TB were reported in the United States for a case rate of 2.9 cases per 100,000; this represents a slight decrease compared with 2015 (-3.4 percent). North Dakota is one of 12 states to report an incidence rate higher than the national average (2.93).

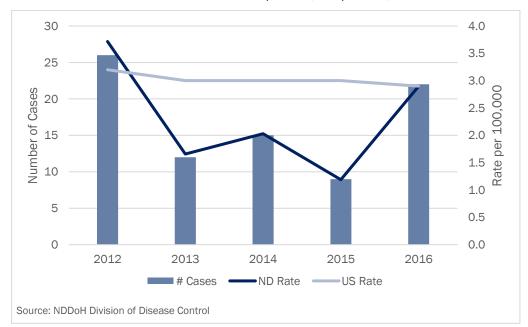


Figure 41. Active tuberculosis cases and incident rate per 100,000 persons, 2012-2016

GENDER

In 2016, there were nine female cases and 13 male cases of active tuberculosis.

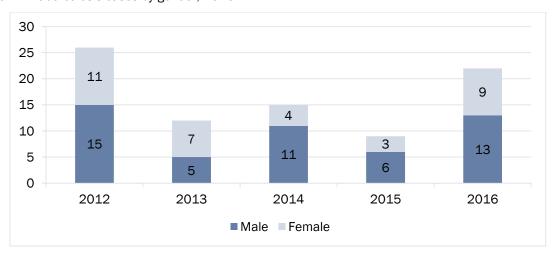
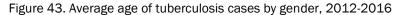


Figure 42. Tuberculosis cases by gender, 2016

AGE

Active TB in North Dakota is diagnosed at a younger age than the U.S. average. Seventy-three percent of cases are between the ages of 0 and 44 compared to the U.S. at 45 percent, and 27 percent of North Dakota cases are between 45 and 65+, compared to the US at 55 percent.



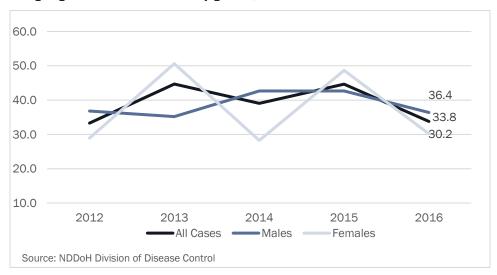
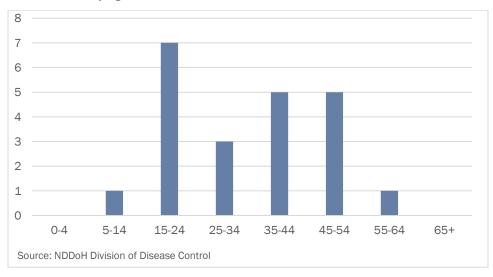


Figure 44. Active TB cases by age



RACE

Although incidence of TB in North Dakota is low, cases that are reported demonstrate a racial disparity. The majority of TB cases in North Dakota are from a racial or ethnic minority. Of the 22 cases reported in 2016, U.S.-born persons accounted for six (27 percent) cases, and 16 cases (73 percent) cases occurred among foreign-born persons. Among foreign-born persons, the highest TB incidence was among Asians (98.8 cases per 100,000) followed by Black/African Americans (45.9 cases per 100,000).

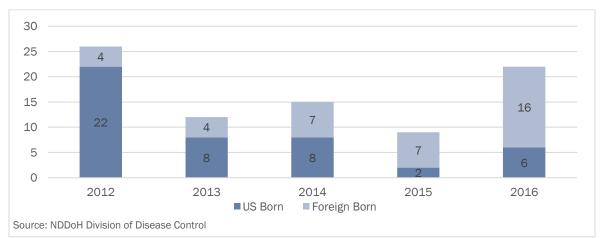
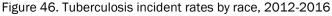
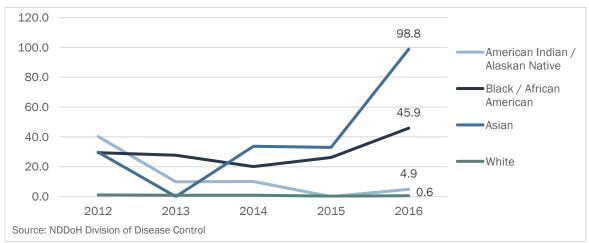


Figure 45. Number of active tuberculosis cases born in the U.S. and foreign countries, 2012-2016





GEOGRAPHY

In 2016, the 22 TB cases were reported from eight counties. These counties included Barnes, Burleigh, Cass, Grand Forks, Mercer, Renville, Rolette and Williams. The map below lists the number of reported cases by county. The shading indicates the rate of TB per 100,000 persons by county.

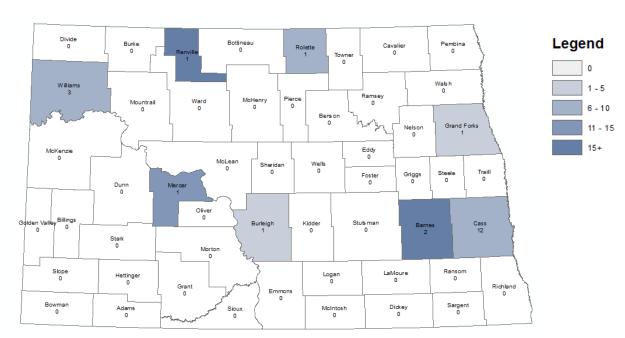
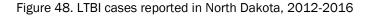
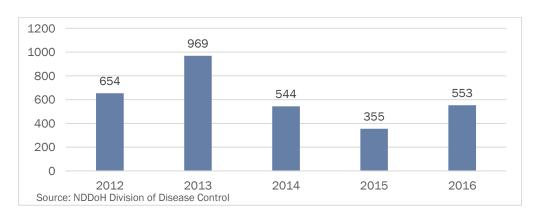


Figure 47. Active TB case counts and rate per 100,000 persons by county, 2016

LATENT TUBERCULOSIS INFECTION (LTBI)

The North Dakota TB elimination goal is to reduce the number of active tuberculosis cases; this can only be achieved by identifying and treating persons with TB infection (LTBI). In 2016, 553 cases of TB infection were reported to NDDoH. The TB Program partners with local public health units and correctional facilities to provide TB medication, ensuring appropriate treatment is available to treat TB infection.





22 Active TB Cases

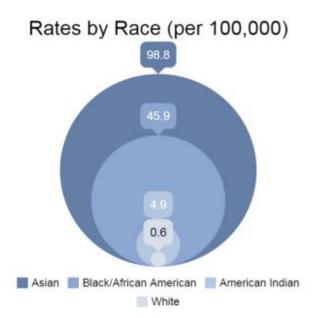
553 Latent TB Infections

2.9 cases per 100,000

2.93 cases per 100,000

North Dakota is one of 12 states with an incidence rate higher than the United States.

73% of TB cases were foreign born.



HIV AND HCV COUNSELING, TESTING AND REFERRAL PROGRAM

The Counseling, Testing and Referral (CTR) Program offers HIV and HCV testing. In addition, HAV and HBV vaccinations are provided by some CTR sites to those at risk for HCV. The goal is to offer HIV and HCV testing at CTR sites to increase accessibility to healthcare services for populations at risk. CTR sites aim to inform clients of their HIV and HCV status, counsel and support risk reduction, and secure needed referrals (i.e., medical, social, prevention and partner services).

The NDDoH funds 21 free, confidential CTR sites. With satellite clinics, 32 facilities across North Dakota are offering CTR services (Figure 49). CTR sites consist of family planning clinics (43 percent), local public health units (19 percent), student health centers (14 percent), county correctional facilities (10 percent), pregnancy centers (10 percent) and one community health center. CTR sites often have advantages of being able to provide comprehensive health care including STD testing and treatment, additional vaccinations, primary healthcare, substance abuse referrals and many other services in addition to integrated HIV and HCV testing.

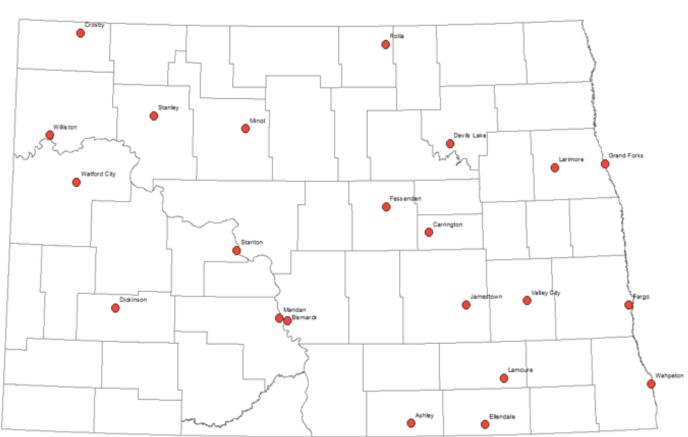


Figure 49. Location of CTR sites

HIV/AIDS COUNSELING, TESTING AND REFERRAL DATA

In 2016, 4,293 HIV tests were conducted at CTR sites, an 11 percent decrease from 2015. CTR sites implemented a new electronic data management system that could explain why testing decreased in 2016. The new data entry system has better capabilities of deduplicating patients, ensuring the same patient wasn't entered twice for one test. In addition, data cleanup was able to be conducted utilizing the new data management system.

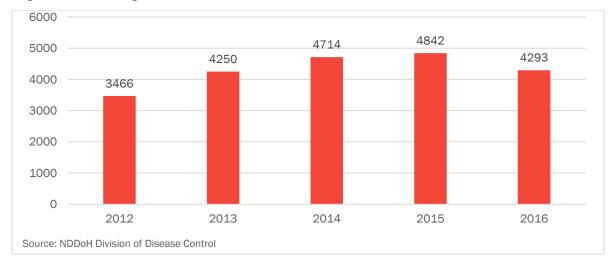


Figure 50. HIV testing conducted at CTR sites, 2012-2016

GENDER

Of the 4,293 tests, 1,941 (45.2 percent) were male and 2,352 (54.8 percent) were female. Only 0.02 percent of HIV tests were performed among individuals identifying as transgender females. With a significant portion of CTR sites being family planning clinics, it is not unexpected to see more testing among females.

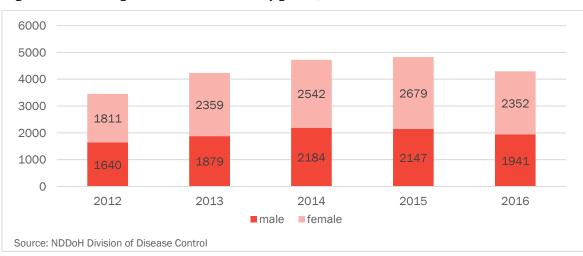


Figure 51. HIV testing conducted at CTR sites by gender, 2012-2016

AGE

The majority (57 percent) of people tested for HIV were between the ages of 20 and 29. This is consistent with the same age groups with the highest number of incident cases of HIV in North Dakota.

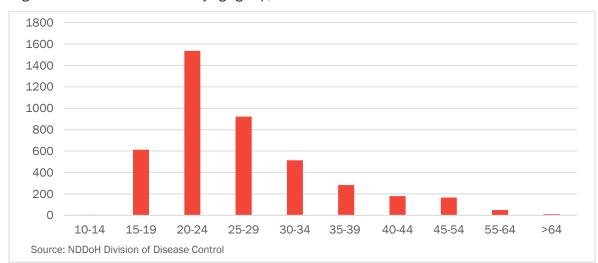


Figure 52. HIV tests at CTR sites by age group, 2016

RACE

In 2016, North Dakota CTR sites tested 3,238 whites, 491 Black/African Americans, 384 American Indian/Alaskan Natives and 70 Asians. Testing rates and incident rates of HIV are highest among Black/African Americans.

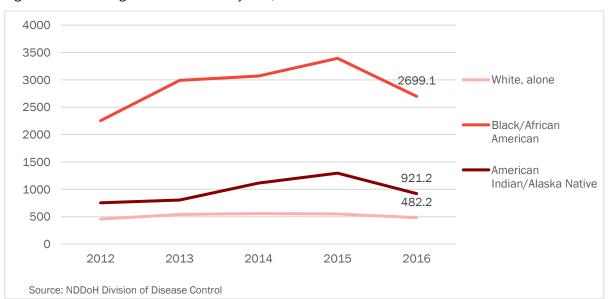


Figure 53. HIV testing rates at CTR sites by race, 2012-2016

GEOGRAPHY

At the 21 state-funded CTR sites, residents in 47 of 53 counties were reported to have received an HIV test.

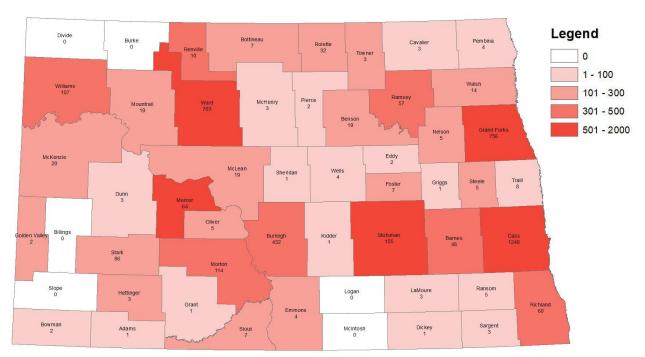


Figure 54. Number of HIV tests and rates per 100,000 by county, 2016

RISK FACTORS

The risk factor most commonly identified over the past three years is unprotected sex, with 88.5 percent tested in 2016 reporting this risk factor. In 2016, 12.4 percent of patients reported having sex with an injection drug user as their reason for seeking testing, followed by 10.8 percent identifying as a person who injects drugs. Only 16.5 percent of all males tested identified as MSM.

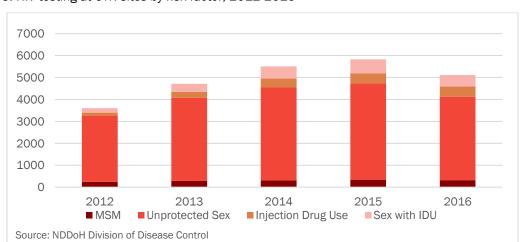


Figure 55. HIV testing at CTR sites by risk factor, 2012-2016

HIV POSITIVES IDENTIFIED AT CTR SITES

In 2016, 17 individuals were identified as being rapid HIV positive. Of those 17, 11 were confirmed to be newly diagnosed HIV cases. The rapid HIV test used at CTR sites had a 0.16 percent false positive rate in 2016. The number of newly identified HIV cases increased by 120 percent from 2015, as only five cases were identified in 2015. Of those identified, there were nine males and two females. Of the male cases, 66 percent identified as MSM. The ages of those identified ranged from 21 to 53 with a median of 31 years.

HCV COUNSELING, TESTING AND REFERRAL DATA

In June 2013, rapid testing was instituted in CTR sites, which resulted in a dramatic increase of HCV testing from 2013 to 2015. In 2016, 1,471 patients were tested for HCV, a 28 percent decrease from 2015. As with HIV, a new and improved electronic data entry system could explain a portion of this decrease. In addition, CTR sites emphasized enhanced targeted screening for HCV, focusing on current and former drug users as well as others at high risk for HCV.

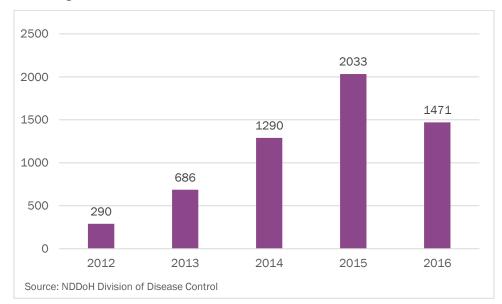


Figure 56. HCV testing at CTR sites, 2012-2016

GENDER

In 2016, 732 (49.8 percent) males and 739 (50.2 percent) females were tested for HCV at CTR sites. Current HCV morbidity is more often diagnosed among males than females. As with HIV, more females tested is to be expected by the types of CTR sites.

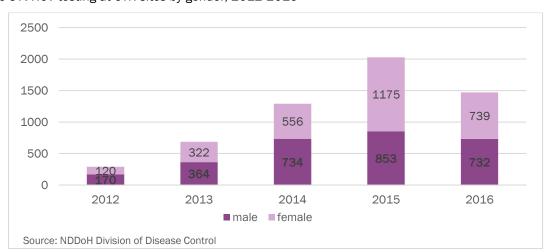


Figure 57. HCV testing at CTR sites by gender, 2012-2016

AGE

There has been an increase of HCV in North Dakota and nationwide among persons under 35 years of age. CTR sites are excellent places for testing young individuals in North Dakota. In 2016, 77.7 percent of individuals tested for HCV were under the age of 35.

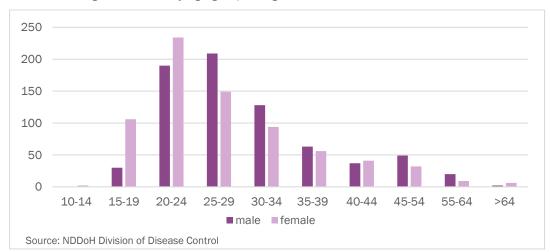
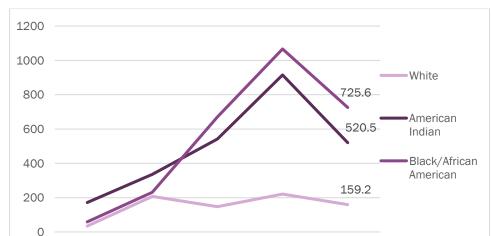


Figure 58. HCV testing at CTR sites by age group and gender, 2016

RACE

In 2016, the majority (73 percent) of those tested for HCV were white. Fifteen percent of those tested were American Indian/Alaska Natives, and 9 percent were Black/African Americans. As with HIV, testing rates were highest among Black/African Americans. The highest rate of HCV diagnosis is among American Indian/Alaska Natives. Currently, there are no CTR sites located on tribal reservations.



2015

2016

2014

Figure 59. HCV testing rates at CTR sites by race, 2016

2012

2013

Source: NDDoH Division of Disease Control

GEOGRAPHY

Residents of 36 of 53 counties were reported to have received an HCV test at CTR sites in 2016.

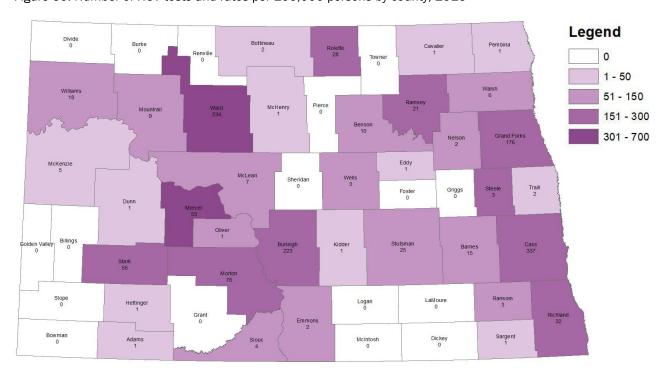


Figure 60. Number of HCV tests and rates per 100,000 persons by county, 2016

RISK FACTORS

The risk factor most commonly identified over the past four years continues to be sex with an injection drug user, with 28 percent of persons tested in 2016 reporting this risk factor. Almost 43 percent of cases admitted to some type of drug use, but only 27 percent of patients report injecting drugs. Of those who reported injection drug use, 78 percent reporting sharing injection equipment. Other risk factors reported in 2016 include receiving tattoos or body piercings in unsterile environments (11 percent) and having sex with a HCV-infected person (5 percent). Of all the males tested for HCV, 18 percent identified as MSM.

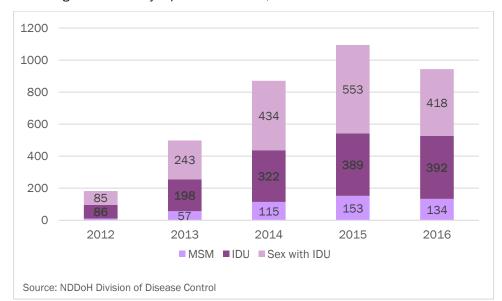


Figure 61. HCV testing at CTR sites by reported risk factor, 2012-2016

HCV POSITIVES IDENTIFIED AT CTR SITES

In 2016, 105 (7.1 percent) individuals were identified as being rapid HCV positive. The positivity rate is the highest rate identified at CTR sites since the introduction of rapid testing. A higher positivity rate indicates increased targeted testing. Of those identified, there were 54 (51 percent) females and 51 (48.6 percent) males. The ages of those identified ranged from 18 to 60 with a median of 28 years. Of the rapid HCV positives that were identified, 85 percent admitted to injection drug use in the last 12 months.

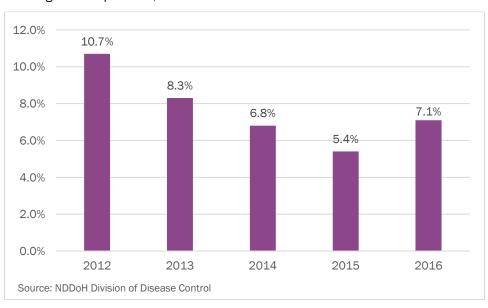


Figure 62. Percentage of HCV positives, 2012-2016

RYAN WHITE PROGRAM

The Ryan White HIV/AIDS Program Part B assists HIV-positive individuals with the cost of medical care, treatment and support services. North Dakota only receives funding for Part B services, including AIDS Drug Assistance Program (ADAP). As of December 31, 2016, the Ryan White Program served 216 (55 percent) out of 390 persons living with HIV/AIDS (PLWH) in North Dakota. In calendar year 2016, 258 unduplicated clients were enrolled in the program. That is a 13 percent increase from the calendar year 2015.

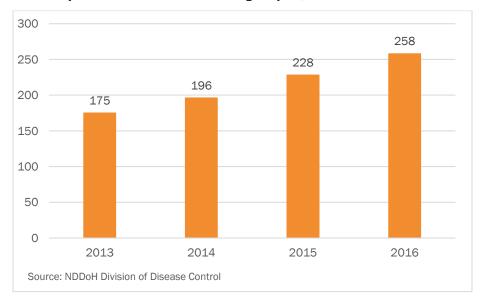


Figure 63. Number of Ryan White clients enrolled during the year, 2013-2016

GENDER

The majority (63 percent) of clients served by the program are males. However, the number of female clients has steadily increased from 31 percent in 2013 to 36 percent in 2016. The majority of the females enrolled in Ryan White are foreign-born and contracted HIV through heterosexual exposure in their native countries.

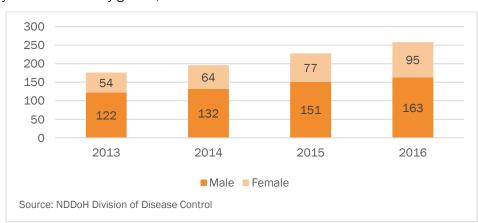


Figure 64. Ryan White clients by gender, 2013-2016

AGE

The majority of clients (46 percent) enrolled in 2016 are between the ages of 45 and 64, followed by the 25 to 44 age group (43 percent). The average age for Ryan White clients is 43, which is older than the average age of PLWH living in North Dakota.

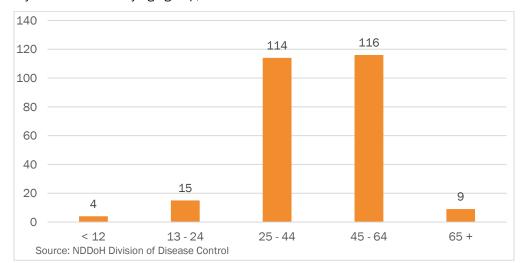


Figure 65. Ryan White clients by age group, 2016

RACE

The majority of Ryan White clients enrolled in 2016 are White (49 percent). However, the number of Black/African American clients has been on a steady increase. The proportion of Black/African American clients increased from 31 percent in 2013 to 45 percent in 2016. The number of Hispanic clients has also increased from 5 to 7 percent.

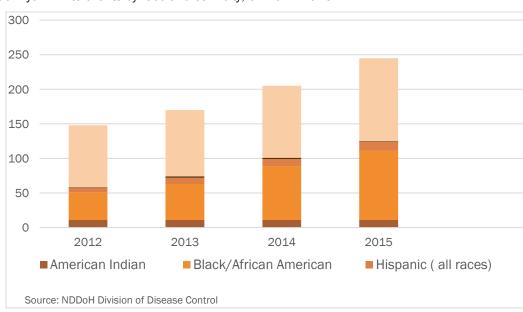


Figure 66. Ryan White clients by race and ethnicity, CY 2012-2016

GEOGRAPHY

The majority of clients served reside in or around the four major cities in North Dakota: Fargo, Bismarck, Minot and Grand Forks. Fargo Cass Public Health served 42 percent (109/258) of enrolled clients in 2016.

Table 2. Ryan White Clients served by region, CY 2016

Case Management Agency	2016
Western Region	25
SW District Health Unit - Dickinson	12
Upper Missouri District Health Unit - Williston	12
Upper Missouri District Health Unit - Stanley	1
Southcentral Region	63
Bismarck Burleigh Public Health - Bismarck	45
Central Valley Health Unit - Jamestown	7
Custer Health - Mandan	11
Northcentral Region	29
First District Health Unit - Minot	28
Lake Region District Health - Devils Lake	1
Eastern Region	141
Fargo Cass Public Health - Fargo	110
Grand Forks Public Health - Grand Forks	28
Richland County Health - Wahpeton	3
Total Number of Clients Enrolled	258

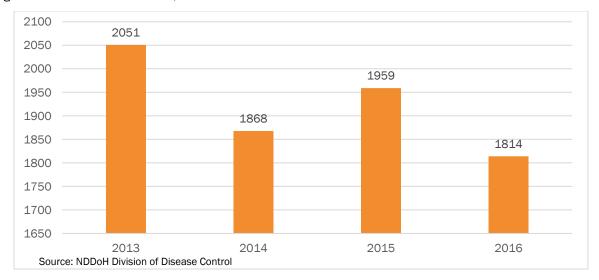
ADAP

The AIDS Drug Assistance Program (ADAP) provides medication assistance to uninsured clients. ADAP also provides insurance assistance for clients on Medicaid, Medicare or private insurance by providing copay and deductibles assistance, as well as premium assistance for Medicare Part D premiums and private coverage purchased through Marketplace. Medications are dispensed through retail pharmacies that utilize Medicaid Managed Information System for claims submission in real time.

The number/medication fills dispensed and overall total cost have decreased since the implementation of Medicaid Expansion and Qualified Health Coverage through the Federally Facilitated Marketplace in 2014. The graph below shows the number of monthly

prescription fills per calendar years 2013 through 2016. The number of fills for 2016 has decreased due to more clients transitioning to single table regiments, as well as due to clients having health insurance. The cost of treatment per client served has decreased from \$9,549 in 2013 to \$6,315 in 2016. The cost of copays/deductibles per client served in 2016 was \$1,789, compared to the cost of medication assistance for uninsured clients of \$10,232.





HIV CARE CONTINUUM

The HIV care continuum is a model that outlines the steps of HIV medical care from initial diagnosis to achieving the goal of viral suppression, and it indicates the proportion of individuals living with HIV who are engaged at each stage. The continuum has the following stages: diagnosis of HIV infection, linkage to care, retention in care, receipt of antiretroviral therapy and achievement of viral suppression. As various obstacles contribute to poor engagement in HIV care and limit the effectiveness of efforts to improve health outcomes, the care continuum is used to better identify gaps in HIV services and develop strategies to improve engagement in care and outcomes for PLWH.

The CDC currently uses two different continuums. The HIV prevalence-based continuum shows steps of the continuum as a percentage of the total number, or the prevalence, of PLWH. The diagnosis-based continuum shows steps as a percentage of the number of PLWH who were only diagnosed. As a low-incidence state, North Dakota has developed the prevalence-based continuum.

The continuum steps below are for PLWH in North Dakota as of December 31, 2016. The measurement year is the calendar year 2016.

- HIV-diagnosed: number of prevalent HIV cases; prevalent cases include the number of newly diagnosed HIV cases in North Dakota, as well as previously diagnosed HIV cases who moved to the state and were living in North Dakota as of December 31, 2016
- Linked to care: the number of PLWH in the calendar year 2016 that had one or more viral load or CD4 tests? after their diagnosis date
- Retained in care: the number of PLWH with one or more viral load or CD4 lab tests in the measurement year
- Antiretroviral use: number of PLWH who have a documented antiretroviral therapy (ART) prescription in the Maven surveillance system
- Viral load suppression: number of PLWH whose most recent HIV viral loads within the measurement year were less than 200 copies/milliliter (mL).

Limitations: HIV is a reportable condition in North Dakota, and all viral load and CD4 lab tests are electronically reported to the NDDoH. However, the NDDoH does not perform medical chart reviews on PLWH to determine all HIV-related medical visits or antiretroviral use. This contributes to possible underreporting of the number of individuals linked and retained in care, and to underreporting of individuals receiving ART. The number of individuals prescribed ART is determined by using Ryan White? (RW) ADAP reimbursed claims data. Therefore, only individuals who are on RW and whose medications are reimbursed through ADAP are reported as receiving ART. This excludes individuals not on RW, as well as those who are on RW but whose medications are reimbursed through primary coverage (i.e., private insurance, Medicaid or Medicare).

As of December 31, 2016, there were 390 PLWH in North Dakota. Of those, 55 percent were enrolled in RW. Ninety-two percent of all PLWH are linked to care and reported at least one medical visit since their diagnosis. Eighty-six percent were retained in care by

having a medical visit in 2016. Seventy-eight percent were receiving ART, and 71 percent were virally suppressed. Compared to the national rates (Figure 2), North Dakota has significantly higher rates along each stage of the continuum. The national suppression rate for 2013 was 55 percent, whereas the overall suppression rate for North Dakota is 71 percent.

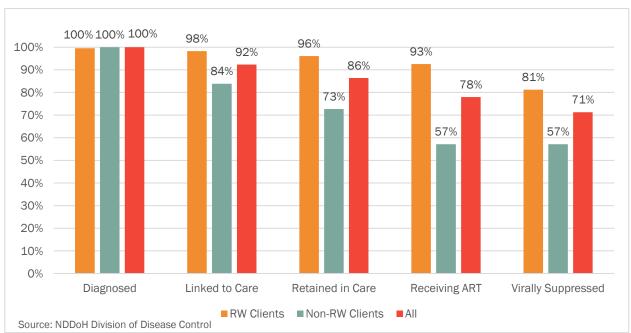
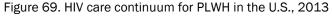
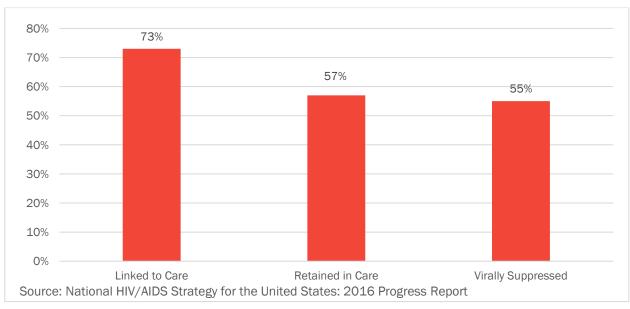


Figure 68. HIV care continuum for PLWH in North Dakota, 2016.





There is a significant disparity between the PLWH not enrolled in RW versus those enrolled (Figure 65). Eighty-four percent of non-RW PLWH are linked to care, and only 57 percent

are virally suppressed, compared to 98 percent of RW clients who are linked to care and 81 percent who are virally suppressed. Looking closely at the unsuppressed RW clients, the number is likely to be higher than the continuum shows because, in many instances, clinicians will stop ordering viral loads and only order CD4 counts to monitor the immune system health of those clients who have been virally suppressed for a period of time and are adhering to their treatment.

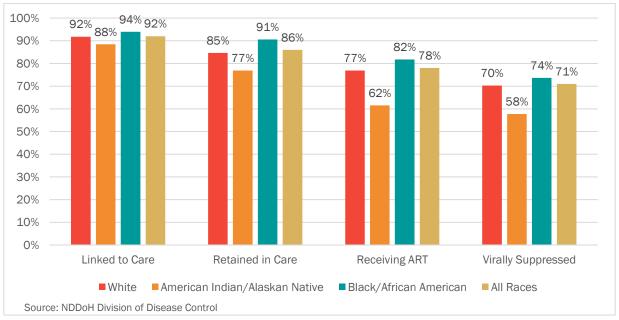
In 2016, North Dakota saw an increase in the percentage of PLWH that were linked to care, retained in care, receiving ART and virally suppressed. The percentage of PLWH that are virally suppressed has increased from 59 percent in 2015 to 71 percent in 2016.

Reaching viral load suppression is important for several reasons. Viral suppression ensures that the health of the person is maintained or restored. It also minimizes or eliminates short- or long-term damage caused by the virus, and it lowers the risk of HIV transmission since there is a lower amount of virus in the blood and body fluids.

DISPARITIES BY RACE

There does not seem to be a racial disparity among PLWH living in North Dakota for being linked to HIV care. Black/African American PLWH have the highest viral suppression rate of 74 percent. American Indian/Alaskan Natives have the lowest percentage of receiving ART and therefore are less likely to be virally suppressed.





DISPARITIES BY RISK

The majority (44 percent) of PLWH in North Dakota as of December 31, 2016 were MSM. Forty-one percent are heterosexual and 6 percent reported injection drug use (IDU).

Looking at the care continua for each risk category, IDU have the highest percentage of being linked to care but are more likely to fall out of care. Only 52 percent of those with IDU as a risk factor were virally suppressed as of December 2016.

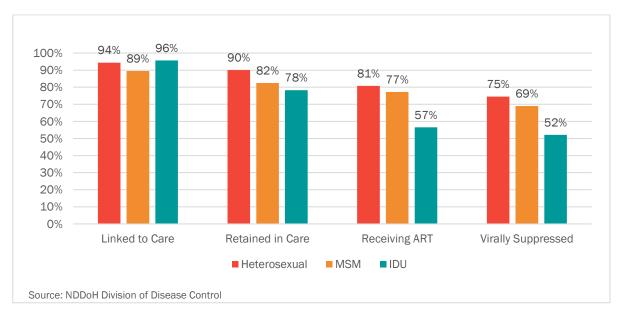


Figure 71. HIV care continuum by risk factor, 2016

The HIV Care Continuum provides a model to monitor progress toward the objectives outlined in the National HIV/AIDS Strategy (NHAS). The model will also be used by the Community Planning Group (CPG) for planning and prioritizing goals and resources to address the needs and disparities of PLWH in North Dakota. The CPG will develop appropriate interventions to address the racial and socio-economic disparities, as well as determine necessary re-engagement activities to improve outcomes at each stage? of the care continuum.

The existing services, such as partner services, additional testing for comorbidities, educational opportunities regarding care and treatment, and prevention with positives activities will be reevaluated to assess their effectiveness and potential areas for improvement.